MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
John Engler, Governor • Russell J. Harding, Director

ENVIRONMENTAL RESPONSE DIVISION
INTERNET: http://www.deq.state.mi.us/erd

INFORMATION BULLETIN

KINGSFORD/BREITUNG TWP. SITE
KINGSFORD, DICKINSON COUNTY
January 1999

INTRODUCTION

This information bulletin provides an update on continuing environmental contamination investigations in the city of Kingsford/Breitung Township area (see Figure 1 for Area of Concern). This report is a follow-up to the September 1997 public information meeting in Kingsford regarding the presence of groundwater contamination and methane gas in the area.

Investigations into the source and extent of the methane gas problem were conducted by the U.S. Environmental Protection Agency (EPA) and the U.S. Geological Survey (USGS). Subsequent to that work, investigations into the source and extent of groundwater contamination and the related methane gas problem have been conducted by the Michigan Department of Environmental Quality (DEQ) and Arcadis, Geraghty & Miller (ARCADIS) - a consulting firm working for the Ford Motor Co. (FORD) and the Kingsford Products Co. (KPC) (see "Chronology of Events"). These investigations show that organic contaminants are present in the groundwater. Methane gas present in the groundwater and soil is a by-product of the decomposition of these organic contaminants. Studies to date reveal that potential sources of groundwater contamination and the related methane gas include areas used by FORD and KPC for disposal of wood-waste by-products (organic and inorganic contaminants, including tars) from past charcoal and chemical manufacturing practices in Kingsford.

This investigative effort was prompted by the July 1995 explosion of a Kingsford residence, attributed to accumulations of methane gas in the basement of the home.

PUBLIC SAFETY

The major hazards associated with methane -- a colorless, odorless gas -- are its explosiveness and flammability. Over time, methane gas can migrate upward from groundwater to soil and potentially seep into dwellings through basement cracks or service line openings. Accumulations in confined spaces such as basements can pose an explosion hazard at certain levels (between five and 15 percent by volume in air) if exposed to an ignition source (e.g., basement furnace, water heater, or static electricity).

At some locations within the site, concentrated methane gas has been identified in the soils located above the water table. Where these concentrated methane gas "pockets" lie beneath layers of silt and clay, upward migration of the methane gas appears to be restricted. ARCADIS will continue to monitor these identified methane gas pockets until an appropriate remedy can be implemented.

As a precautionary measure, the DEQ asks residents within the Area of Concern to periodically inspect their basements and foundations and make any necessary repairs to cracks and openings through which methane gas could enter. The DEQ, in cooperation with the City of Kingsford, is providing methane detectors and an EPA guide (addressing needed repairs for basements) at no charge to residents living within the currently defined Area of Concern. The free methane detectors and EPA guide may be obtained from the Kingsford Public Safety Department (KPSD), 510 S. Westwood Avenue.

Between September 1997 and December 1998, KPSD employees distributed approximately 1,200 methane detectors. At the time of the printing of this bulletin, KPSD staff have responded to 103 methane detector alarms. Of these, KPSD determined that only two alarms were actually caused by methane, and investigations by the USGS did not confirm the presence of methane gas at these locations.

SITE STATUS

Continuing work at this site includes: drilling soil borings, monitoring of soil vapor extraction (SVE) systems, groundwater sampling, monitoring of gas probes, and inspection and removal of surficial tar (further described under "Interim Response Actions").

ARCADIS anticipates that drilling and groundwater sampling for the current investigation should be completed by April 1999. The removal of surficial tars and monitoring of the SVE systems and gas probes will be on going. The findings of the investigation are expected in a report from ARCADIS to the DEQ by the fall of 1999. This schedule is approximate and is dependent on weather conditions, investigation results, additional fieldwork requirements, and DEQ approvals. When the information becomes available, a public meeting will be scheduled.

Once the site has been adequately characterized, data derived from the investigation will be used to prepare a feasibility study (FS). The FS will identify a cleanup remedy that is protective of public health, safety, and the environment and natural resources.

SITE HISTORY

From 1921 through 1951, FORD operated a plant in Kingsford that produced wooden automobile body parts. The plant generated approximately 400 tons of scrap wood daily. To utilize the scrap wood, a wood carbonization and distillation plant was put into operation in 1924. The wood carbonization plant produced charcoal and briquettes, while the distillation plant produced several commercial chemical products, including methanol, acetates, acetone, alcohols and ketones. FORD ceased its wooden automobile parts manufacturing operations at the site in 1951. In that same year, the plant was sold to KPC's corporate predecessor, Kingsford Chemical. Kingsford Chemical continued operation of the wood carbonization and distillation plant until its closure in 1961.

Wastes generated from the plant were disposed of in at least two disposal areas – the "Tar Pits" and the "Riverside Dump" (see Figure 1). Both areas were unlined and lacked measures to contain the wastes or contaminants that could leach from the wastes. The Tar Pits, located immediately to the west of the plant, consisted of three interconnected depressions in the ground surface. It is believed these depressions were used to dispose of liquid and other wastes from the automobile parts manufacturing and the wood carbonization and distillation operations. There is no remaining physical evidence visible at the ground surface of these waste-filled depressions except for a few areas where tar is exposed in the northeast portion of the Tar Pits. No tar has been observed at the ground surface in the southwest portion of the Tar Pits (where Lodal Park is located). The Riverside Dump is located south of W. Pyle Avenue, and was used to dump solid waste from the plant.

INTERIM RESPONSE ACTIONS

In September 1998, FORD and KPC entered into an agreement with the DEQ to implement three interim response (IR) activities at the site to prevent or mitigate injury to the public health and safety, or to the environment. The three IR activities include: operation and maintenance of the existing SVE systems located at 2104/2108 Breen Avenue and 2001 Emmet Avenue, inspection and removal of surficial tar found in the northeast portion of the Tar Pits, and the implementation of an Emergency Response Plan (ERP). The ERP defines actions to be taken by FORD and KPC to ensure the safety of the communities should a methane gas emergency arise; including provisions for evacuation, alternate housing, hazard mitigation, and other response actions.

SITE GEOLOGY

The investigation area is comprised of glacial deposits consisting of a complex interbedded system of sand and gravel, and lacustrine (lake) clay and silt beds that overlie bedrock to a maximum depth of 365 feet (see Figure 2). Because of the complex nature of the deposits, correlation of the units between soil borings is subject to interpretation.

In general, four groups of unconsolidated deposits (loose, uncompacted soil types) were encountered within the investigation area. The deepest unit overlying the bedrock is a basal till (unsorted sediments from glacial runoff). A second group, overlying the basal till, includes successive layers (in no particular order) of silts, clays, and very fine sands. These layers are thought to have been deposited (settled out) in a former lacustrine (lake) environment. The third group is comprised of successions (intermixed layers) of fine to coarse sands and gravels that are believed to have been deposited during glacial runoff. The fourth group, located adjacent to the Menominee River, are sands which are representative of historic deposition of river and stream sediments. One or more of these units may be absent depending on the location within the

investigation area, and in other areas there may be additional units present that have not been mentioned here. Figure 2 is an artistic rendition of a geologic cross-section inferred above.

INVESTIGATION FINDINGS

Based on data collected during the ARCADIS site investigation, and from previous investigations, the following generalizations about the site can be made:

1) Methane Gas. Elevated levels of methane gas are present in the soil and groundwater at some locations in the Area of Concern. The Area of Concern, which was previously defined at our September 1997 public meeting, included all areas west and south of the intersection of Woodward Avenue and North Blvd. and west and south of the intersection of East Blvd. and Carpenter (Hwy 95). Based on information now available, the Area of Concern has been adjusted to be those areas west and south of the intersection of Woodward Avenue and Balsam Street, and west and south of Pyle Avenue and Hooper Street. A small area to the north of the intersection of Westwood and Woodward Avenue is also included into this Area of Concern (see Figure 1).

2) Groundwater. Some contaminants detected in the groundwater within the site include: acetone, arsenic, benzene, copper, 2,4-dimethylphenol, lead, 2-methylphenol, 4-methylphenol, and phenol. Concentrations of these compounds exceed the Michigan Natural Resources and Environmental Protection Act (Public Act 451 of 1994) Part 201 drinking water criteria. These compounds, methane and others were found in water samples collected at, and downgradient of the Tar Pits. From the Tar Pits, groundwater flow is towards the Menominee River in west, southwest and southerly directions. **Most homes and businesses in the area are served by a public water supply, and those users are not at risk of exposure to contaminated drinking water**. However, if you own or use a property within the Area of Concern that is served by an individual well, please contact Mr. Christopher Austin at the DEQ Crystal Falls Office (see "For More Information") to arrange to have your individual well sampled.

3) Surface Water. The Menominee River is located approximately 3,000 feet west of the Tar Pits, and is approximately 700 feet west of the Riverside Dump. Methane gas discharging from the groundwater has been observed bubbling up into the river on the west side of the city. At a minimum, it appears that contaminated groundwater is discharging to the river along an approximate ¾ mile stretch. Monitoring wells were installed to evaluate the quality of groundwater entering the river. At the time of this bulletin printing, laboratory data of the groundwater quality was not yet available.

4) Soil. Samples collected at the disposal areas indicate that soil has been contaminated by a variety of compounds, including 2-methylnaphthalene, 2-methylphenol, 2,4-dimethylphenol, 4-methylphenol, arsenic, copper, and lead. Concentrations of these compounds exceed the Part 201 criteria for protection of drinking water. Levels of arsenic and lead in some of the near surface soils in the western half of the Riverside Dump (see Figure 1) pose an unacceptable risk to persons who may be exposed via ingestion or direct skin contact. Direct contact with the soils at the Riverside Dump should be avoided.

5) Tars. Hazardous substances identified by chemical analyses of tar at the site include: acetone, benzene, phenols, and trichloroethene. These substances are present in concentrations that may pose an unacceptable risk to persons who could be exposed to the tars via ingestion or direct skin contact. At some locations (refer to Figure 1) around the northeastern portion of the Tar Pits, tar migrates slowly upward from below the ground, pooling at the ground surface. Since May 1998, FORD and KPC have removed tar from the ground surface around the northeast portion of the Tar Pits. The DEQ asks the public to avoid areas where tar pools at the ground surface of the northeastern portion of the Tar Pits. The Kingsford Public Works Building is not included in this area.

FOR MORE INFORMATION

For more comprehensive information on the project and activities, you may either visit the Information Repository located at the Dickinson County Library, 401 Iron Mountain Street, Iron Mountain, or contact the DEQ project coordinator:

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Crystal Falls Field Office
1420 U.S. 2 West
Crystal Falls, MI. 49920
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If you did not receive this bulletin in the mail, and would like to receive further information regarding the site, please contact Mr. Austin to have your name added to our mailing list.

CHRONOLOGY OF EVENTS

July 1995 – Accumulation of methane gas in a basement led to the explosion of a residential dwelling at 2104 Breen Ave. Response actions by the Michigan Consolidated Gas Company confirmed the presence of methane gas at explosive levels, but eliminated the natural gas pipeline in the area as the source.

December 1995 – U.S. Senator Carl Levin requested that the U.S. Environmental Protection Agency (EPA) become involved in efforts to control methane gas in the residential area along the intersection of Breen and Garfield Avenues.

January 1996 to February 1996 – The EPA and its subcontractors designed/installed a soil vapor extraction (SVE) system to control methane gas in the Breen/Garfield Ave. area.

March 1996 – The EPA organized government and university groups to determine the source, nature, and extent of the methane gas problem in Kingsford.

April 1996 to September 1996 – The EPA and its subcontractors began an investigation into the source of the methane gas problem. The work included the installation of monitoring wells and temporary soil gas probes, geophysical logging, and sampling of soil and groundwater. The investigation identified areas where high concentrations of methane was present in groundwater, which resulted from the biological decomposition of organic contaminants. The EPA determined that potential sources of the methane included areas used by FORD and KPC for disposal of wood-waste byproducts from past charcoal and chemical manufacturing practices.

May 1996 – The Michigan Department of Environmental Quality (DEQ) agreed to take over operation and maintenance (O&M) of the SVE system in the Breen/Garfield Ave. area.

March 1997 – Accumulations of methane gas in and around the residential dwelling at 2001 Emmet Ave. prompted the EPA and its subcontractors to design and install a SVE system in the Emmet/Grant Ave. area.

May 1997 – FORD and KPC entered an Administrative Order by Consent (AOC) with the EPA to perform an Engineering Evaluation and Cost Analysis Study (EE/CA). The purpose of the study was to characterize the soil and groundwater conditions, determine the transport and fate of methane gas in the subsurface, and to evaluate possible remedial alternatives.

May 1997 to March 1998 – Arcadis, Geraghty & Miller (ARCADIS), FORD and KPC's consultant, performed the EE/CA work. The work included the installation of monitoring wells, soil borings, and soil gas probes; the measurement of groundwater levels; and soil and groundwater sampling. Results of this investigation show that soil and groundwater conditions at the site are extremely complex, that methane gas is present in the groundwater in an area larger than originally estimated, and that the methane gas is associated with elevated levels of organic contaminants in the soil and groundwater.

June 1997 – The DEQ notified FORD of its legal responsibilities under Part 201 (Environmental Remediation) of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended, and requested that FORD voluntarily take the necessary actions to resolve its liability regarding the former Ford Motor Company Plant site in Kingsford.

July 1997 – The DEQ agreed to take over operation and maintenance of the SVE system in the Emmet/Grant Ave. area.

September 1997 – The DEQ, in cooperation with the city of Kingsford, provided free methane detectors and related guidance to residents living within the city of Kingsford and Breitung Township. The methane detectors continue to be provided free of charge, as a precautionary measure for area residents.

January 1998 – The DEQ notified KPC of its legal responsibilities under Part 201, and requested that KPC voluntarily undertake the necessary actions to resolve its liability regarding the former Ford Motor Company Plant site in Kingsford.

May 1998 – In response to the DEQ's June 1997 and January 1998 requests, FORD and KPC submitted a draft remedial investigation (RI) work plan. The work plan was revised in July 1998 to include comments from the DEQ. The objectives of the RI are to: characterize soil and groundwater conditions, define the nature and extent of soil and groundwater contamination, evaluate groundwater contamination discharging into the Menominee River, and to further evaluate the presence, concentration, and origin of methane gas in the subsurface soils.

June 1998 – The EPA transferred all regulatory aspects of the site to the DEQ. The DEQ began oversight of the additional work being performed by ARCADIS.

June 1998 to present – ARCADIS has carried out the RI. The work includes the installation of monitoring wells and gas probes, drilling soil borings, measurement of groundwater levels, monitoring of gas probes, test pitting, and sampling of soil and groundwater.

June 1998 to September 1998 – FORD and KPC voluntarily implemented interim response (IR) activities at the site. The work included weekly surficial tar removal at the Tar Pits, monitoring of the two SVE systems located at 2104/2108 West Breen Ave. and 2001 Emmet Ave., and upgrades to the SVE systems.

July 1998 – FORD and KPC submitted the EE/CA report to EPA. The report recommended conducting additional work due to the complex nature of the soil and groundwater conditions.

September 1998 – FORD and KPC signed an agreement with the DEQ to continue their IR activities, and to implement an emergency response plan (ERP). The purpose of the ERP is to define actions to be taken to ensure the safety of the communities should a methane gas emergency arise.